

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

| | | | |
|--|--|---|----------------------|
| Applicant's or agent's file reference SPE02/15 | FOR FURTHER ACTION | | See Form PCT/PEA/416 |
| International application No. PCT/EP2004/006806 | International filing date (day/month/year) 18.06.2004 | Priority date (day/month/year) 04.07.2003 | |
| International Patent Classification (IPC) or national classification and IPC C08L23/04 | | | |
| Applicant SOLVAY POLYOLEFINS EUROPE - BELGIUM(S.A) | | | |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> | | | |
| <p>4. This report contains Indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input checked="" type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p> | | | |
| Date of submission of the demand 26.01.2005 | | Date of completion of this report 07.09.2005 | |
| Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 | | Authorized Officer Droghetti, A Telephone No. +31 70 340- | |



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/006806

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-14 as originally filed

Claims, Numbers

1-11 as originally filed

Drawings, Sheets

1/2-2/2 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/006806

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------------|
| Novelty (N) | Yes: Claims | 3,5,6,8-11 |
| | No: Claims | 1,2,4,7 |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | 1-11 |
| Industrial applicability (IA) | Yes: Claims | 1-11 |
| | No: Claims | |

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)

and /or

2. Non-written disclosures (Rule 70.9)

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/EP2004/006806

Re Item V

Reference is made to the following documents:

D1: EP A 1201713 (cited by the applicant as WO02/34829)

D2: KR A 2003049193

D3: US B 6541592

D4: US A 3770852

1. Novelty (Art. 33(2) PCT)

The subject-matter of claims 1,2,4,7 is not novel for the following reasons.

1.1. D2 discloses a polymer blend useful for pipes comprising a polyethylene and a ionomer (graft-MAH-PE) as claimed in the same amounts.

Thus the subject-matter of claims 1,4,7 is not novel in view of D1 (see search report).

1.2. D3 discloses a polymer blend useful for tubes comprising a bimodal polyethylene and a ionomer as claimed in the same amounts.

Thus the subject-matter of claims 1,2 is not novel in view of D3 (see search report).

1.3. D4 discloses a polymer blend presenting improved ESCR and comprising a polyethylene and a ionomer as claimed (see search report).

Thus the subject-matter of claims 1,4 is not novel in view of D4.

2. Inventive Step (Art. 33(3) PCT)

The subject-matter of claims 1-11 does not involve an inventive step. The reasons are as follows.

2.1. Being not novel claims 1,2,4,7 cannot be regarded as inventive either.

2.2. Furthermore D1 which is regarded as the closest prior art, discloses a bimodal polyethylene useful for pressure pipes as claimed (see search report).

The pressure pipes comprising the bimodal PE according to D1 present a pressure rating of above PE 100 (see page 3, paragraph 16).

The present application differs from D1 in that a defined ionomer in an amount range is present.

According to the examples on file, the use of the distinguishing feature above leads to an improvement of the mechanical properties (e.g. creep resistance) over the PE of D1.

The problem to be solved by the present invention may therefore be regarded as the preparation of a polyethylene polymer blend having improved mechanical properties.

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/EP2004/006806

The solution proposed in claims 1-11 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

The use of polar polymers or ionomers as claimed is well known in the art for preparing polyolefins blends useful for pipes.

In D2,D3 and D4 for examples ionomers as claimed and in the same amount ranges are blended with polyethylene (e.g. bimodal) in order to obtain mixtures with improved mechanical properties (e.g. ESCR, pressure resistance).

The invention of claims 1-11 does not involve more than employment of properties of the polar polymers and ionomers, which are already known from documents D2-D4.

Thus the skilled man trying to prepare a polyethylene blend for pipes and starting from D1 would have found in D2-D4 a hint of use a ionomer as claimed in order to solve the problem posed.

Thus the subject-matter of claims 1-11 cannot be regarded as inventive in view of D1-D4.

3. The subject-matter of claims 1-11 meets the requirements of Article 33(4) PCT, with regard to industrial applicability.

Re Item VI

Certain published documents

| Application No Patent No | Publication date (day/month/year) | Filing date (day/month/year) | Priority date (valid claim) (day/month/year) |
|-----------------------------|--------------------------------------|---------------------------------|--|
| PCT/EP04/002082 | 10/09/2004 | 27/02/2004 | 28/02/2003 |

Re Item VII

1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D2,D3 and D4 is not mentioned in the description, nor are these documents identified therein.

Re Item VIII (Art. 6 PCT)

1. Claims 5,6 and 9 are not supported in the description.

2. The standard methods or at least the conditions for measuring the density and the melt indices (in claims 3,6,8) should be mentioned in the claims (see page 4).

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/EP2004/006806

3. The term "preferably" does not limit the claims, thus rendering the same unclear (see claims 2,4).